Sustainable Action Fund Grant Program

LARGE GRANT – CONCEPTUAL APPLICATION

For applicants requesting $5,000-$300,000. Application instructions can be found in the Large Grant Application Toolkit located on our website wwu.edu/sustain/programs/saf/apply/ Applications are due by March 3rd, 2017. Submit applications by delivering a hard copy AND emailing a scanned version (including signatures) to the SAF Grant Program Coordinator Johnathan Riopelle at Viking Commons Room 24. Email: John.Riopelle@wwu.edu.

1. PROJECT TITLE:Electric Vehicle Charging Stations

2. TEAM INFORMATION

Project Advisor Information (Faculty or Staff) *Student proposals must include a staff or faculty advisor. The role of the advisor is to provide assistance and guidance to the proposal submitter during the development, implementation and post-implementation stages of the proposal process.*

Project Lead: There must be at least one team leader assigned to the project.

Name	**Department/School** Students also provide major/minor	**Position** Faculty/staff/student. Students provide expected quarter/year of graduation	**Phone Number**	**Email**	**W#**
Project Advisor:	Charles Barnhart Environmental Science Faculty; Huxley College	Faculty	360-650-4423	charles.barnhart@wwu.edu	W01240663
Project Lead:	Whitaker Jamieson B.S. Energy Systems Sciences; Energy Policy Minor	Student Spring 2018	206-478-0623	jamiesw@wwu.edu	W01147464

	Spiridon Pappas B.A. Business and Sustainability Major; Political Science Minor; Economics Minor	Student Spring 2018	206-883-3427	pappass@wwu.edu	W01274960
	Mary Moeller, Economics/Mathematics Major	Student Spring 2018	360-594-1346	moellem2@wwu.edu	W01231098

3. PROJECT DETAILS

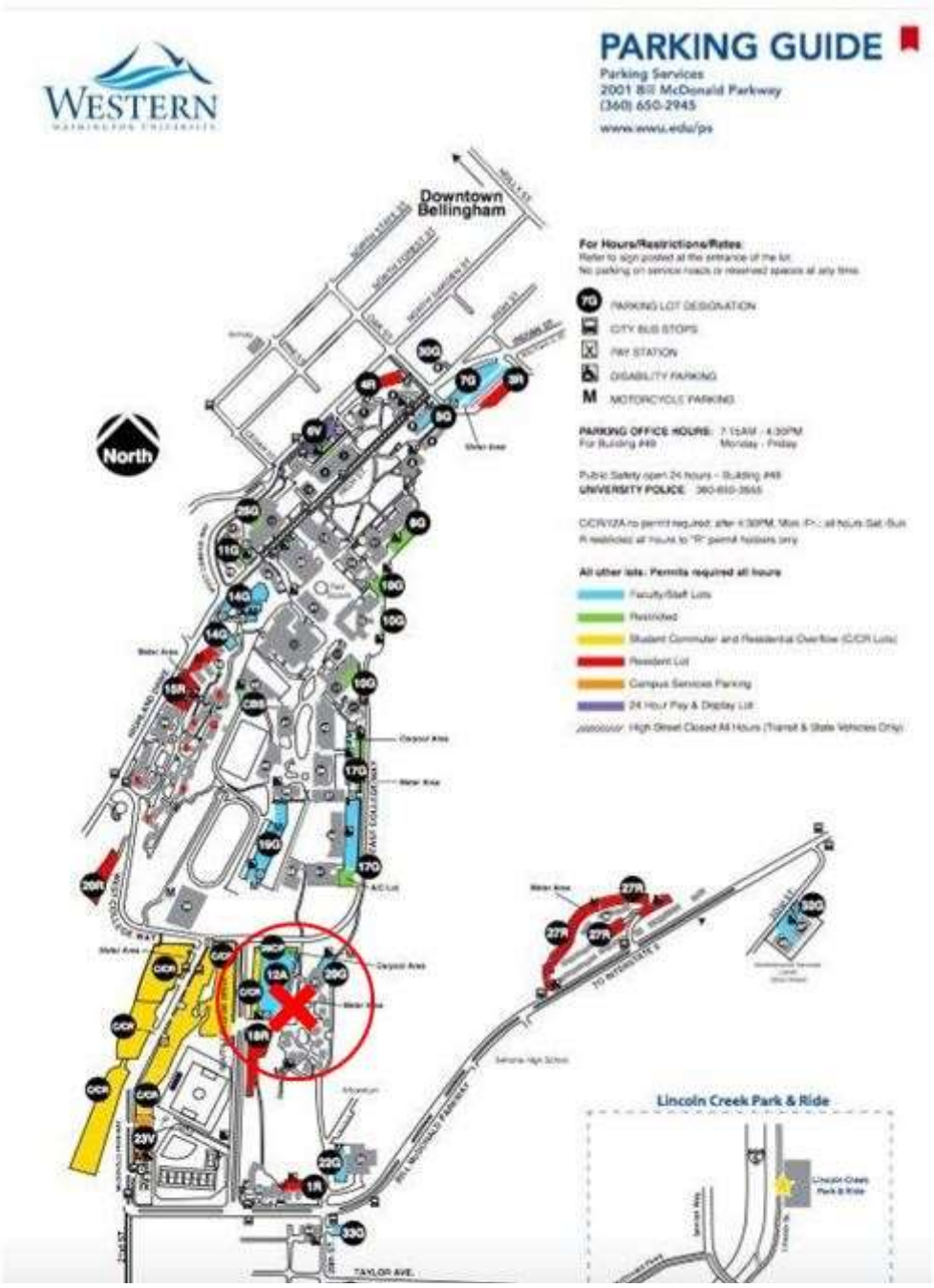
a. Describe your proposed project.

Our proposal is to install three "RS Dual Pedestal Mount" charging stations, to serve six parking spots on the southeast corner of lot 12A on Western Washington University's campus. These six parking spots will be designated as the "electric vehicle charging" spots, available to students, faculty, staff and Western visitors while their car is charging. Charging will be paid for by parking passes and monetary fees for charging, which will be handled by parking services. Parking services will enforce the safety and security of the charging stations. Parking in these spots while not charging will be prohibited in accordance with the Revised Code of Washington, RCW 46.08.185. We have not yet come to a decision on the amount of time that a car can be in the spot while it is charging. Parking Services will finalize and implement the policy, once it has been established.

Photo 1. Electric Vehicle charging station: "RS Dual Pedestal Mount" from AeroEnvironment.

Photo 2. Site of charging station

Photo 3. Location of site on WWU map- EV Charging Stations will be located in the southeast corner of lot 12A, a faculty and staff lot. This location was specified because it is right next to electrical lines carrying the voltage and amperage necessary for EV charging stations.



b. Describe the purpose of your proposal.

The purpose of our proposal is to encourage the use of plug-in electric vehicles to, from, and nearby Western Washington University's campus in Bellingham. We aim to reduce greenhouse gas emissions from cars by adding convenience for electric vehicle charging. Our project will serve as the first electric vehicle charging stations, on a campus that prides itself on being sustainable. These electric vehicle charging stations will also be open to the public, and to the Western Community at large.

c. Provide a rough budget estimate.

Item	Cost ($)	Notes
Charging Stations including cost of shipping and tax--photo below	$3733.85 per unit (likely 3 units) $11,200	Full document available. This assumes 6 circuits of appropriate size are available and no upgrades are needed. Awaiting report from Scott Dorough.
Smart meters	Unknown, likely <<$5000	Will talk to PSE about obtaining smart meters.
Installation (getting installation cost estimate) (person-hours) (rental equipment) (facilities installation cost) (electrician costs)	Unknown estimated between $30,000 and $60,000	Largest item from preliminary estimate document. Getting information from Bob Putich (we had a meeting on Feb. 3rd). Cost estimate will be based on WWU facilities management and maintenance labor rates.
Electricity	~$10,000 per year	Assumes 5 charging hours per station per day and a price of 15 cents per kWh.
Maintenance and upkeep	Estimated at <$1000 per year	Case Studies at similar universities reveal little to no maintenance and upkeep cost for the first few years.
Total	$55,000 - $85,000	rounded up to nearest 5000

Below is the preliminary cost estimate from 2014 and an official quote (1-31-17) from Aeroenvironment- full documents available.

Product	Sales Price	Quantity	Total Price
EVSE-RS Dual Pedestal	$3,275.00	1.00	$3,275.00

Subtotal	$3,275.00
Shipping and Handling	$160.00
Tax	$298.85
Grand Total	$3,733.85

HOURS:		400.00	
FM CREW LABOR:		$25,484.20	
NON FM CREWS & MISC. COSTS:		$1,800.00	
FM RENTAL EQUIPMENT:		$750.00	
MATERIAL:		$29,700.00	
SUBTOTAL - MACC :		$57,734.20	
PERMIT COST:	$	500.00	
A&E FEE - LA:		$10,969.50	
FIXED ESTIMATED PROJECTS FEE - WA:			
PURCHASING OVERHEAD & SALES TAX;	$	6,278.58	
Total Preliminary Cost:		$75,482.28	
Total Preliminary Cost Range:	$	**67,900.00**	**to** **$90,600.00**

I took the overall costs and subtracted Purchasing Overhead/Sales Tax and Material from the cost and got rough numbers of 30,000 to 60,000 rounding to the nearest $10,000.

d. How does your proposal align with the Sustainable Action Fund Grant Program mission?

This proposal supports the reduction of WWU's environmental impact and carbon footprint goals, by providing the electric vehicle charging infrastructure to support the use of electric vehicles. This is critical in supporting the transition from fossil fuels to renewable energy resources. Encouraging electric vehicle transportation is important because it reduces the amount of greenhouse gases emitted from transportation. Reducing the world's dependency on fossil fuels, especially petroleum is an important task for this generation, and having

access to electric vehicle charging stations is a large part in shifting our dependency away from fossil fuels. This proposal aligns with the Sustainable Action Fund Grant Program mission by increasing student involvement and education, reducing the University's environmental impact, and creating an aware and engaged campus community. With the installation of EV charging stations, we will increase student involvement and education through an educational campaign aimed to increase awareness and promote the University's advancement of plug-in electric vehicle accommodations. Simultaneously, our proposal aligns with the Sustainable Action Fund Grant Program mission by reducing the amount of greenhouse gases emitted from transportation to, from, and nearby campus. By effectively promoting the electric vehicle charging stations, and encouraging the use of the equipment to the public and the greater Western Community, we are helping create an aware and engaged campus community. We want to help people understand not only how to use EV charging stations, but understand why charging stations make a difference.

e. Does your project tie into any broader campus sustainability goals or initiatives? If yes, please describe how.

Our project ties in with the 2010 Climate Action Plan for a net zero carbon emissions by 2050 adopted by the WWU Board of Trustees (this plan was part of a Washington State's requirement for all state agencies to adopt a strategy for reducing carbon emissions through RCW 70.235.050). Electric Vehicle charging stations reduce carbon emissions by rerouting the primary energy consumption flow. In Washington all-electric vehicles emit about half as much as a hybrid getting about 45 miles per gallon assuming they're driving equally far (Alternative Fuels Data Center, electric emissions).

Once Western's Sustainability Action Plan is finalized, it will become a roadmap for creating a healthier and more sustainable campus community. Our proposal will contribute to the first goal of the campus and community engagement objectives within the Sustainability Action Plan, which is to support campus and community engagement to advance sustainability. This project supports campus and community engagement to advance sustainability, because we are proposing the installation of the first electric vehicle charging stations on campus and making them available for use by campus, the Western community at large, and the public. This notion also ties into the third goal of campus and community engagement, which is to make Western's sustainability resources easily accessible by the public. The location of our electric vehicle charging stations are in the most popular traffic-areas on campus, making them easily accessible to campus visitors. The Sustainability Action Plan has a strong commitment to transportation, and our proposal aligns with numerous goals addressed by the Sustainability Action Plan. Our proposal aligns with the objective to engage in local transportation solutions, by providing the first electric vehicle charging stations on campus. Our proposal also aligns with the goal of reducing climate impacts of employees and students by encouraging the use of electric vehicles.

4. CASE STUDIES

Find at least one example of the type of project you are working on at another institution and describe what make them successful. Additional case studies will strengthen your proposal.

Project home institution, title, and start date	**Purpose of project, size and scope of project, players and stakeholders involved, how the project is progressing now & results.**
Evergreen	"We first installed 110-120v outlets near some utility fleet locations and in one of the general parking lots sometime around 2007. At the time, we had about seven institutional EV's charging at those locations, and only a couple privately-owned EV's charging in the lot. Most of the institutional vehicles broke down and are no longer in service. At the end of 2011, we were able to install two Blink, Level 2 stations next to the existing 110v outlets, and we designated three EV only spaces (one space was required to be ADA accessible). This was done with an Ecotality grant in the last weeks of that program. The project came in at very little cost to the college. The WA Dept of Commerce had purchased a dozen Blink chargers earlier in the year, and we were able to get two of those, while the grant covered almost all of the installation costs. We necessarily located the Blinks near the main service for that parking lot and took advantage of preparations our electrician made when he put in the 110v outlets years before. It's a decent location for that lot, but it was also a favored location for parents going to the Child Care Center and to the gym, so I've received a few complaints from them, but nothing significant. There is no rain cover on any of our parking. I thought that might be an issue with the EVSE, but no one has ever commented or complained about the rain. Blink, of course, went belly-up a couple years after our installation and was sold at auction to the Car Charging network. I've been, very slowly, working with them to get full control of our chargers, but they don't

	respond quickly. As a result, we haven't made any changes since the installation, nor have they done anything more than maintain the network. Use was pretty light for the first few years and just started bumping up last year. We are already seeing this fall that we need to expand the number of charging locations and/or EV designated parking spaces. I'm working on options for that. We also have a satellite campus in Tacoma with no exterior charging options, and they now have their first student driving an EV to school. So, I'm also working on a solution for them this year."- Scott Morgan, Director of Sustainability at The Evergreen State College.
EWU	Four level-2 PowerPost EV charging stations were installed Spring of 2016 (on Earth day April 22nd). They are level-2 charging stations that charge at a voltage of 208-240 Volts Alternating Current (VAC) and 14 Amps able to provide up to 3.4 KiloWatts (kW) of power to an electric vehicle (approximately ten to fifteen miles per hour of charge). Telefonix manufactured the charging stations and EWU installed them. No maintenance has been required so far. Five or six vehicles currently use the stations on and off although there seems to be no increase in demand yet. The stations are not sheltered from the elements and so far that hasn't affected their performance. The location of the charging stations was determined primarily because of where there was a circuit that could take the increased demand. The locations serve opposite sides of the campus, and the lots have a history of having stalls available without affecting permit sales. The spots are limited to four hours per person and are metered spots costing $1.25 per hour. The stations also include an energy monitoring system, eGauge system is what EWU calls it, that allows EWU to track energy consumption over time. Each vehicle will obtain approximately 40 miles in 4-hours of charging. These were to be topping off stations to return home, not full-service charging which would be done at home during the night.
UW Bothell	UW Bothell initially had 6 charging outlets back before May 2011. They first installed 6 chargepoint charging stations and now have 14 level-2

	chargepoint charging stations and 16 designated EV charging spots. 8 of the charging stations are contained within dual stations with two cords per physical stations (1 charging station per cord). The last charging station was installed summer of 2016 and so far no charging stations have needed maintenance or repair, however all but one station is sheltered from the elements in parking garages. The EV designated spots and charging spots are in a preferred location. Current policies dictate that any electric vehicles may park and or charge in the EV spots (charging or just EV designated), however every car must be an <u>all</u> electric vehicle. The spots are first come, first serve with no reservations. Charging holds no additional charge beyond just paying for the parking spot. See below for graph of demand increase.

Data straight from the source is available, however, we did the best to summarize the important information above.

Graph 1. Graph from UW Bothell showing demand of charging stations increasing over time from Summer 2011 till summer 2016.

Summary Table

University /College	# of level 2 chargers	# of level 1 chargers	Since when have chargers been used	# of EV only parking spots	Has demand increased?
EWU	4 (used as top-off stations)	0	Spring 2016	4	Demand is expected to increase but less than 10 cars currently utilize the stations off and on
Evergreen	2	Multiple outlets available (since 2007)	2011	3	Initially no but last year demand increased and more charging stations expected to be needed soon
UW Bothell	14 (2011 to summer 2016)	6 outlets available (since 2011)	2011	16	First 1.5 years only a little bit, but after that very much so and there's a graph

Table. 1. Summary of Case Studies

Additional studies available upon request.

5. PROJECT TEAM, PARTNERS AND STAKEHOLDERS

a. Using the table below describe how each of your team members can contribute to the success of this project.

Name	**Relevant experience or knowledge for this project. Also detail the roles and responsibilities of each project partner.**
Project Advisor: Charlie Barnhart	Provides overall project guidance and carbon accounting expertise.
Project Lead: Whitaker Jamieson	Whitaker leads the project in terms of objectives, goals, and vision. He determines the technology and the logistics of the project overall. Whit brings a knowledge of energy systems.
Spiridon Pappas	Spiridon plans the educational campaign, marketing and advertising, and student awareness of the project. Offers supplementary help to the Project Lead. Spiridon brings experience with the SAF grant process.

Mary Moeller	Mary investigates case studies for nearby institutions and provides details for the scope of the project, and researches policy implementation and stakeholders. Mary brings a business background and helps connect the team to the appropriate people.

b. List the stakeholders and project owners that your project will need to work with if your team is approved to write a final application.

Stakeholder/Project Owner	**Describe how each listed stakeholder/project owner will be impacted by or involved in this project. Will their permission be required for your project to move forward?**
Project Owner: Bob Putich Student Business Office Manager (Parking Services Manager)	In a meeting we had on February 3rd, Bob expressed that he talks with other college campus parking service managers about how they deal with EV charging stations and that he fully supports the project and where the parking spots will be located. He thinks that having the stations installed before summer start is a good idea and if possible installing them at the end of an already scheduled project due to end on July 15th may be a perfect time. He is waiting on cost estimates and the conceptual application approval to fill out the stakeholder and project owner form.
Scott Dorough	Scott has been unresponsive recently, however, he is the reason why there are electric circuits where they are.

Sustainable Action Fund Grant Program

LARGE GRANT – CONCEPTUAL APPLICATION **Applicant Team/Advisor Partnership Agreement**

An Applicant Team / Advisor partnership is a relationship of substance between the project applicant(s) and a faculty or staff advisor involving shared responsibilities and mentoring in undertaking the project funded by the SAF Grant Program. To ensure that the project runs smoothly and achieves its objectives, the SAF Committee requires project applicants and the faculty/staff advisor to demonstrate their commitment to the project by acknowledging the principles of good partnership practice set out below and identifying the nature and role of the partners.

Principles of Good Partnership Practice

1. Project partners must have read the Rules of Operation for the SAF Program (found on this webpage: https://sustain.wwu.edu/saf/ , under the tab, "guiding documents"), reviewed the Large Grant Application Toolkit, and understand what their role in the project will be before signing the partnership statement.
2. The project lead must consult with the partners regularly and keep them fully informed of the progress of the project.
3. Substantial changes to the project should be agreed upon by the partners before being submitted to the SAF Committee. Where no such agreement can be reached, the applicant must indicate this when submitting changes for approval.
4. The partners authorize the project lead to sign the proposal application and represent them in all dealings concerning the project's development, review, and implementation.
5. Project partners must have read the project proposal before signing the completed application.
6. All partners must receive copies of any report submitted to the SAF Committee.
7. All project partners agree to be present during the team's presentation to the SAF Committee in case input is needed or requested.
8. If the grant is awarded, partners shall take part in the development, implementation and review of the project under clearly identified roles and responsibilities.

We will comply with the principles of good partnership practice during the development, implementation, and review of this project.

_____ _____

Project Lead Name Project Lead Signature Date

_____	_____
__ ___	__ ____
Team Member Name	Team Member Signature Date
_____	_____
__ ___	__ ____
Team Member Name	Team Member Signature Date
_____	_____
__ ___	__ ____
Team Member Name	Team Member Signature Date
_____	_____
__ ___	__ ____
Faculty/Staff Advisor Name	Faculty/Staff Advisor Signature Date

Sustainable Action Fund Grant Program

LARGE GRANT – CONCEPTUAL APPLICATION

PROJECT TITLE:

Project Lead Name (print): _____

Project Lead's Signature: _____ _ **Date:** _____

By signing this document you agree that all information is true to the best of your knowledge. You also agree that this information may be shared with the public and members of the Sustainable Action Fund Committee.

Staff/Faculty Advisor's Name (print):

_____

Staff/Faculty Advisor's Signature: _____ **Date:** _____

By signing this document you agree that all information is true to the best of your knowledge.

Comments:

After completing the final draft of your Conceptual Application proposal, please set an appointment with the Sustainable Action Fund Grant Program Coordinator to have your proposal reviewed and signed.

Sustainable Action Fund Grant Program Coordinator, Johnathan Riopelle
Viking Commons, Room 24
Available by appointment
Email: John.Riopelle@wwu.edu
Phone: (360)650-4501

Signature: _____ Date: _____

This signature does NOT indicate that you have received funding, but it does verify that you have fulfilled all the requirements and have successfully submitted a completed Project Proposal by the deadline.

Comments: